

LOBELIA CARDINALIS L., f. **alba** (A. Eaton), n. comb. *L. cardinalis* L., var. *alba* A. Eaton, Man. Bot. N. Am., ed. 7, 375 (1836). *L. cardinalis* L., β *alba* Wood, Class-Book of Bot. ii. 227 (1845). *L. cardinalis* L., γ *candida* Wood, Am. Botanist and Florist 195 (1870).

GRAY HERBARIUM.

FURTHER NOTES ON PHILOTRIA.

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IN a recent issue (RHODORA 21: 114), the writer reported what appeared to be *Philotria angustifolia* growing in brackish water at Old Lyme, Connecticut. The station was revisited in August, 1919, and both flowers and fruit were examined while fresh, so that they can be described in more detail than was possible from dry specimens. Experience proves these parts of Elodeas to be unsatisfactory in the dry state, even when great care is used in preparing them.

At this station the plant occurs as a narrow fringe at the extreme edge of low water, and cannot well be collected except for a short time at the turn of the tide. Hundreds of staminate flowers were seen floating on the slowly moving water as it began to return. Many of these were surrounded by pollen grains, moving along with them, while others that had not yet discharged their pollen, emitted a copious pollen shower at the slightest jar. In these expanded flowers, the three purplish, or purple-flecked, somewhat ventricose, obovate sepals, which are barely united at base, are so strongly reflexed that they meet beneath and resemble a thin, wide peduncle. The narrower petals are similarly reflexed. Consequently the whorls of nearly sessile anthers are raised in effect above the perianth, and the latter cannot impede the flight of the pollen when it is ejected. Possibly also the reflexed perianth, traveling in the water, steadies the rest of the flower and keeps it upright above the surface and in the best position to scatter its pollen. The anther cells are 0.8–1.1 mm. long and very plump, and the firm pollen grains are noticeably large. As the perianth, if spread out flat, could hardly exceed 3 mm. in breadth, it appears that the anthers are large for the size of the flower, and the amount of pollen correspondingly great. In fact, when floating on the water, the whorls of anthers are the conspicuous part of the flower.

In the pistillate flowers, the three obovate, ventricose, purplish calyx-lobes ascend between the three stigmas, while their tips are sharply incurved and form a cup-shaped depression at the base of the stigmas. The whitish, wider petals are recurved and nearly concealed beneath the broad recurved stigmas. As will be seen, the whole forms a minute depression, or bowl, at the surface of the water, and is well adapted to intercept floating grains of pollen and bring them into contact with the stigmatic surfaces. The calyx-lobes are smaller in the pistillate flowers, which are 2 mm. broad, when expanded. Staminodia were observed.

Since the delicate spathe is easily ruptured, the fruit readily escapes and is borne away or sinks into the mud, and is hard to find. In the brief interval at the turn of the tide, more than twenty five specimens of good fruit were secured. In the former note, the fruit was called globose. It should be described rather as blunt plano-convex. The plane side is distinctly flat and has a thin, rather wide, continuous wing. The ridge of the convex surface is truncate and this smaller plane is also winged. In outline lengthwise, the fruit varies from circular to oblong but is prevailingly oblong. It is 1.5–1.7 mm. long and about 1 mm. (exceptionally 1.5 mm.) broad.

In the twenty or more cases where it could be measured accurately, the tubular, two-toothed spathe was found to be 5–7 mm. long.

The writer has not had opportunity to compare the plant with authentic material of *Philotria angustifolia*, and cannot affirm that it is that species but it would seem to be the same, or at least close to it.

It is a pleasant picture to recall,— a quiet August morning, the incoming tide mirror-like in its smoothness and bearing on its flood flowers that are so seldom seen. Many of these, perhaps one hundred, were collected, but they were so elusive and the shore shelved so abruptly, that hardly one in ten could be secured of those that were floating past. It was a fortunate combination of circumstances, which might not occur again in a season, possibly, not in a lifetime.

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